

WHAT IS CLAIMED IS:

1. A system, comprising:

a primary storage;

5 a backup storage;

a restore application configured to restore a set of files from the backup storage to the primary storage; and

a file server configured to, during said restore:

10 determine that one or more blocks of data of a file in the set of files needed by an application have not been restored; and

direct the restore application to restore the determined one or more blocks of data in response to said determination that the one or more blocks of data have not been restored;

15 wherein the restored one or more blocks of data are accessible by the application while said restore is in progress.

2. The system as recited in claim 1,

20 wherein the restore application is further configured to, prior to said restore, generate a map correlating destination locations on the primary storage to source locations on the backup storage for the set of files to be restored; and

25 wherein, to determine that one or more blocks of data of a file in the set of files needed by an application have not been restored, the file server is further configured to access the map to determine if the one or more blocks have been restored.

3. The system as recited in claim 1,

30 wherein, to direct the restore application to restore the determined one or more blocks of data in response to said determination that the one or more blocks of data have not been restored, the file server is configured to send

a message to the restore application, wherein the message is configured to direct the restore application to restore the determined one or more blocks of data; and

wherein the restore application is further configured to restore the one or more
5 blocks of data to the primary storage in response to the message.

4. The system as recited in claim 1, wherein the file server comprises a file system configured to perform said determination that one or more blocks of data of a file in the set of files needed by an application have not been restored and said direction of the
10 restore application to restore the determined one or more blocks of data.

5. The system as recited in claim 1, wherein the file server comprises a file system and a driver coupled to the file system, wherein the driver is configured to perform said determination that one or more blocks of data of a file in the set of files
15 needed by an application have not been restored and said direction of the restore application to restore the determined one or more blocks of data on behalf of the file system.

6. The system as recited in claim 1, wherein the restore application is further
20 configured to update the map to indicate blocks of data that have been restored to the primary storage.

7. The system as recited in claim 1, wherein the system is a Storage Area Network (SAN) system.
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8. A system, comprising:
means for restoring a set of files from a backup storage to a primary storage;
means for determining on a file server that one or more blocks of data of a file in
the set of files needed by an application have not been restored during said
30 restore; and

means for restoring the determined one or more blocks of data;
wherein the restored one or more blocks of data are accessible by the application
while said restore is in progress.

5 9. A method, comprising:
a restore application starting a restore of a set of files from a backup storage to a
primary storage;
during said restore:
a file server determining that one or more blocks of data of a file in the set
10 of files needed by an application have not been restored; and
the file server directing the restore application to restore the determined
one or more blocks of data in response to said determining that the
one or more blocks of data have not been restored; and
the restore application restoring the determined one or more blocks of
15 data;
wherein the restored one or more blocks of data are accessible by the application
while said restore is in progress.

20 10. The method as recited in claim 9, further comprising:
prior to said restore, generating a map correlating destination locations on the
primary storage to source locations on the backup storage for the set of
files to be restored; and
wherein said determining that one or more blocks of data of a file in the set of
files needed by an application have not been restored comprises accessing
25 the map to determine if the one or more blocks have been restored.

30 11. The method as recited in claim 9,
wherein said directing the restore application to restore the determined one or
more blocks of data comprises sending a message to the restore
application, wherein the message is configured to direct the restore

application to restore the determined one or more blocks of data; and
wherein the restore application restores the determined one or more blocks of data
in response to the message.

5 12. The method as recited in claim 9, wherein the file server comprises a file
system, wherein the file system performs said determining that one or more blocks of data
of a file in the set of files needed by an application have not been restored and said
directing the restore application to restore the determined one or more blocks of data.

10 13. The method as recited in claim 9, wherein the file server comprises a file
system and a driver coupled to the file system, wherein the driver performs said
determining that one or more blocks of data of a file in the set of files needed by an
application have not been restored and said directing the restore application to restore the
determined one or more blocks of data on behalf of the file system.

15 14. The method as recited in claim 9, further comprising updating the map to
indicate blocks of data that have been restored to the primary storage.

 15. A computer-accessible medium comprising program instructions, wherein
20 the program instructions are configured to implement:
 a restore application starting a restore of a set of files from a backup storage to a
 primary storage;
 during said restore:
 a file server determining that one or more blocks of data of a file in the set
25 of files needed by an application have not been restored; and
 the file server directing the restore application to restore the determined
 one or more blocks of data in response to said determining that the
 one or more blocks of data have not been restored; and
 the restore application restoring the determined one or more blocks of
30 data;

wherein the restored one or more blocks of data are accessible by the application while said restore is in progress.

16. The computer-accessible medium as recited in claim 15, wherein the
5 program instructions are further configured to implement:

prior to said restore, generating a map correlating destination locations on the primary storage to source locations on the backup storage for the set of files to be restored; and

wherein said determining that one or more blocks of data of a file in the set of
10 files needed by an application have not been restored comprises accessing the map to determine if the one or more blocks have been restored.

17. The computer-accessible medium as recited in claim 15,
wherein, in said directing the restore application to restore the determined one or
15 more blocks of data, the program instructions are further configured to implement sending a message to the restore application, wherein the message is configured to direct the restore application to restore the determined one or more blocks of data; and
wherein the restore application restores the determined one or more blocks of data
20 in response to the message.

18. The computer-accessible medium as recited in claim 15, wherein the file server comprises a file system, wherein the file system performs said determining that one or more blocks of data of a file in the set of files needed by an application have not been
25 restored and said directing the restore application to restore the determined one or more blocks of data.

19. The computer-accessible medium as recited in claim 15, wherein the file server comprises a file system and a driver coupled to the file system, wherein the driver
30 performs said determining that one or more blocks of data of a file in the set of files

needed by an application have not been restored and said directing the restore application to restore the determined one or more blocks of data on behalf of the file system.

20. The computer-accessible medium as recited in claim 15, wherein the program
5 instructions are further configured to implement updating the map to indicate blocks of data that have been restored to the primary storage.